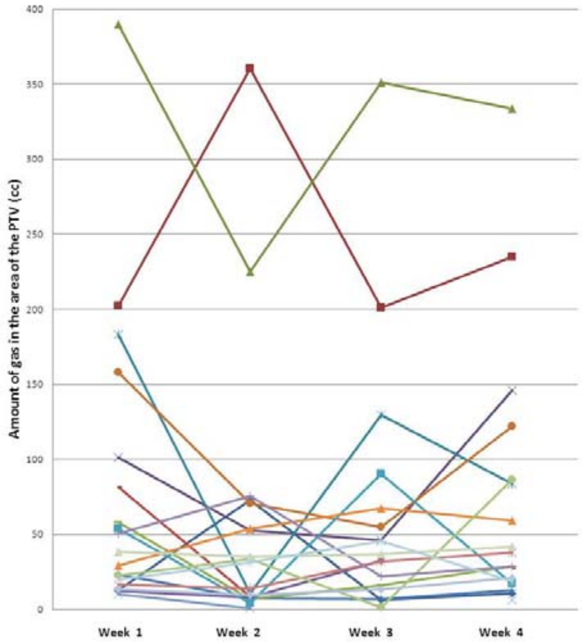
group B showed a trend toward an increase in the amount of gas. Individual week to week variations ranged from -228cc to 264 cc with the largest variations in group B.

Figure 1: Weekly variations in the amount of gas.
(Group A, one line for each patient)



	Group A	Group B
Average week 1	78cc	277cc
Average week 2	57cc	289cc
Average week 3	68cc	336cc
Average week 4	73cc	374cc
Largest absolute change	173cc	264cc
Mean of individual SD's	30cc	76cc

Table 1: Average amount of gas per week.

Conclusions: Differences in the amount of abdominal gas between fractions of individual patients can be substantial, especially in patients with a large initial gas volume. The average amount of gas in the upper abdominal region however, is stable over the course of radiotherapy and does not seem to be dependent on the initial volume of gas.

PO-1097

Dosimetric comparison of 3D-CRT vs IMRT: photon and neutron doses outside the radiation beam

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Purpose/Objective: To verify and compare doses delivered by 3D-CRT and photon beam IMRT to OARs in a simulated prostate cancer treatment in a phantom. To evaluate scattered neutrons in OAR for static fields.
Materials and Methods: The doses delivered to OARs (thyroid, lung, bladder and testes) outside the target were measured in an anthropomorphic Alderson phantom using thermoluminescence detectors (TLD) 100 (^{6}Li (7.5%) and ^{7}Li (92.5%). Each layer in the phantom is 2.5 cm thick and the distance between dosimetric points is 3 cm. This allows for an accurate determination of the doses in the organs of interest. The neutron fluence rate [cm-2s-1] in the selected points inside the phantom was measured in terms of neutron activation analysis (NAA), with the use of gold particles measuring 0.5 cm in diameter with a mean surface density of 0.108 g/cm3.
Results: The doses delivered by 3D-CRT and IMRT to the OAR were, respectively, as follows:: thyroid gland, 0.62 G vs. 2.88 Gyy; lung, 0.99 Gy vs. 4.78 Gy; bladder, 80.61Gy vs. 53.75 Gy; testes, 4.38Gy vs 6.48 Gy. The neutron dose (resulting from the use of high-energy X-ray beams) was approximately 0.5% of the prescribed PTV therapeutic dose. The greater the distance from the field edge, the higher the contribution of this secondary radiation dose (from 8% to ~45%).

Localization	IMRT	3D-CRT	Neutron dose for IMRT
	Mean dose [Gy]	Mean dose [Gy]	Mean dose [mSv]
Thyroid	2.88 ± 0.004	0.62 ± 0.001	5.189
Lung	4.76 ± 0.006	0.99 ± 0.003	5.832
Bladder	53.75 ± 0.070	80.60 ± 0.054	6.201
Testes	6.48 ± 0.013	4.37 ± 0.017	

Conclusions: IMRT resulted in higher doses than 3D-CRT in all OARs, except for the bladder. These results were surprising given that IMRT is typically considered more precise than 3D-CRT. The present study shows that the photoneutron dose makes up approximately 0.5% of the therapeutic dose in the PTV.

PO-1098

Automated planning for lung SBRT: faster optimization without compromise on plan quality

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